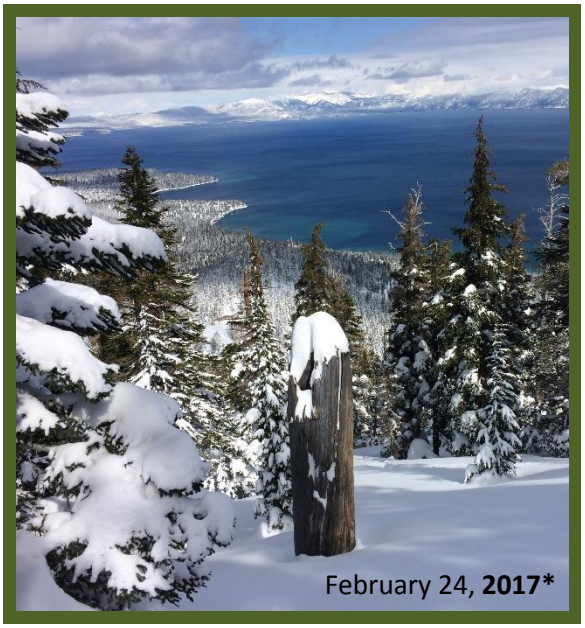
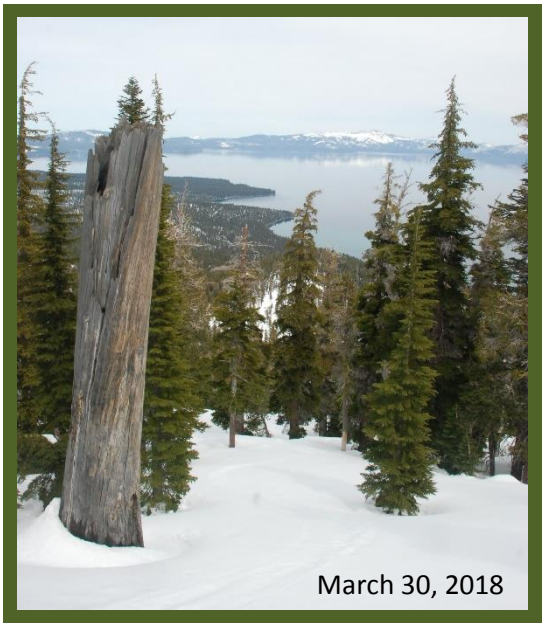
UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

California Water Supply Outlook Report

April 1, 2018





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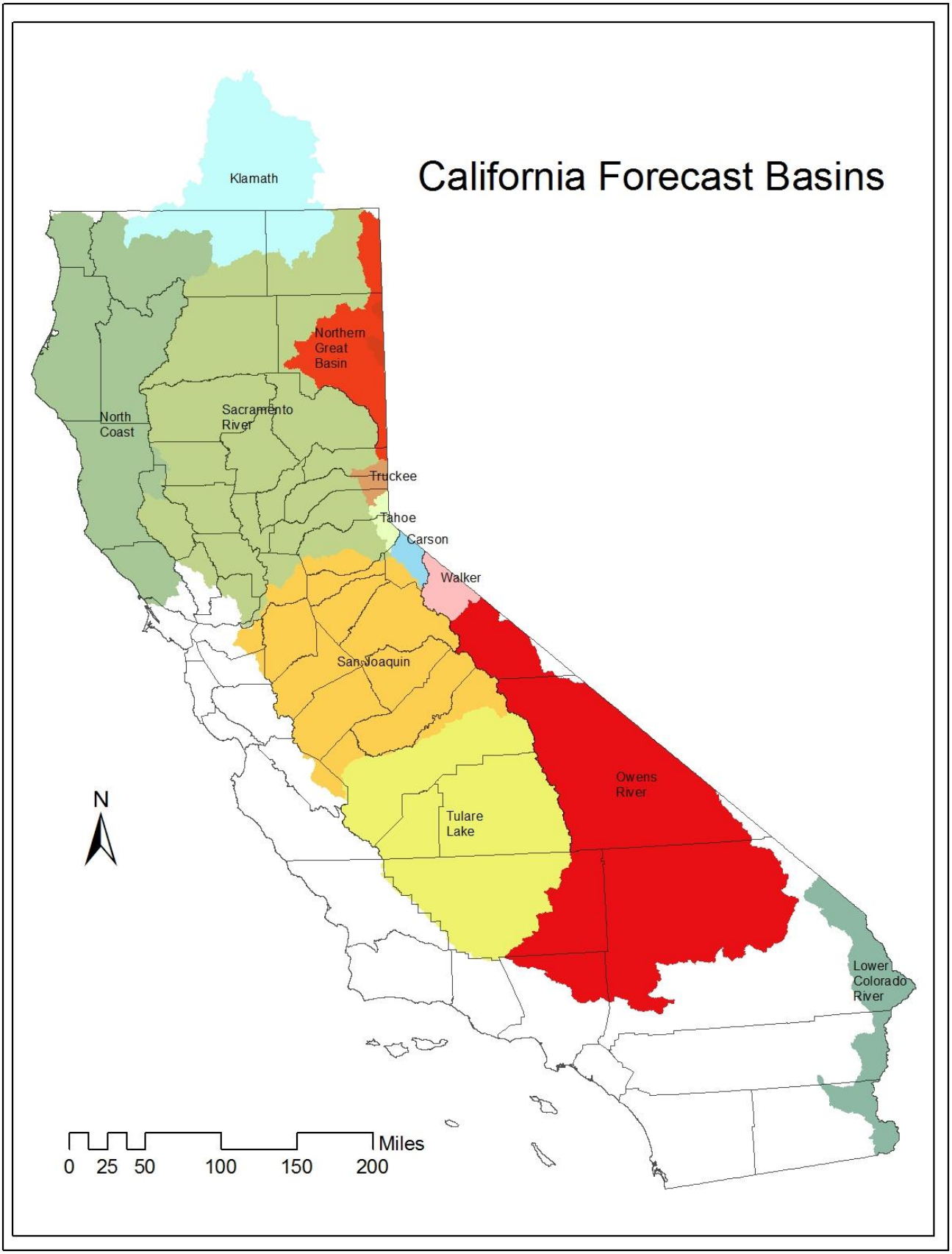
Contents

*Cover photos: Upper- NRCS District Conservationist Dan Martynn (left) and NRCS Water Supply Specialist Jeff Anderson measure snow depth and calculate water content at Squaw Valley #1 Snow Course on March 29, 2018. Lower right- View of Lake Tahoe from the Rubicon Peak #2 Snow Course/SNOTEL sites, taken on February 24, 2017 [*MARCH REPORT CORRECTION: This photo was used on the cover of the March 2018 report and was incorrectly identified as taken in 2018.] Photos courtesy of Evan Smith, NRCS, Grass Valley.*


California Forecast Basins
Klamath
Northern Great Basin
North Coast
Sacramento River
Truckee
Tahoe
Carson
Walker
San Joaquin
Owens River
Tulare Lake
Lower Colorado River
N
0 25 50 100 150 200
Miles

STATE OF CALIFORNIA GENERAL OUTLOOK
April 1, 2018

SUMMARY

California's "March miracle" actually started in late February, with a regularly spaced series of storms tripling the Sierra snowpack by the end of the month, and bolstering precipitation totals across the state. The impressive amounts racked up in March were not enough, however, to compensate for very low snow- and rainfall totals earlier this season, particularly in October, December, and February. The statewide snow water equivalent on April 1st was just 54% of the average for the date, and seasonal precipitation totals remain well below average, especially in the south. California's major reservoirs remain in relatively good shape, due in large measure to carryover from last year.

SNOWPACK

March's storms improved the Sierra snowpack, although conditions remain well below average. In the north, the average snow water equivalent (SWE) increased from 20% of average for March 1, to 44% of average for April 1. SWE's in central and southern Sierras also registered healthy gains, with the April 1st totals just above 50% of average for the date. A warm "atmospheric river" system passed across the north in early April, scaling back some of March's gains.

More information is available online at http://cdec.water.ca.gov/snow/current/snow/index2.html.

PRECIPITATION

Compared to February (which wrapped up with monthly precipitation averages hovering around 15-20%), precipitation in March was downright pluvial; monthly totals in the Northern Sierra (8-Station index), San Joaquin (5-Station index), and Tulare Basin (6-Station index) regions, were 165-, 250-, and 213% of the monthly average, respectively. Intense rainfall during the third week in March triggered local flooding in the Central Sierras, forcing road closures and threatening to overwhelm Hetch Hetchy's Moccasin Reservoir above Don Pedro in Tuolumne County.

More information is available online at http://cdec.water.ca.gov/snow_rain.html

RESERVOIRS

Total storage in California's reservoirs increased slightly in March, to 107% of average by month's end. The Central Coast's six reservoirs again posted the lowest, at just 67% of average, and San Francisco Bay and South Coast regions' reservoirs remained below average overall. Reservoir storage in the remaining basins held steady, at close to or above the historical average for the date. Lake Powell storage declined by almost 400,000 acre-feet in March, bringing it to 77% of its historical average by the end of the month.

More information is available online at http://cdec.water.ca.gov/snow/reservoir_ss.html.

STREAMFLOW

Forecasted flows for all reported streams remain below normal. The streamflow forecasts for the major basins in California are summarized below.

Sacramento River Basin

This month's forecasts of streamflow volumes for April through July are all below average.

SACRAMENTO RIVER BASIN
Streamflow Forecasts - April 1, 2018

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Forecast Point / Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Sacramento R at Shasta (DWR)							
APR-JUL			145	49			295
Sacramento R at Shasta (NWS)							
APR-JUL	141	159	203	65	265	334	312
McCloud R ab Shasta (DWR)							
APR-JUL			320	84			379
McCloud R ab Shasta (NWS)							
APR-JUL	287	307	333	87	376	432	385
Pit R at Shasta Lk (DWR)							
APR-JUL			880	86			1020
Pit R at Shasta Lk (NWS)							
APR-JUL	685	726	759	75	852	956	1013
Inflow to Shasta Lk (DWR)							
APR-JUL	1120		1380	79		1620	1756
OCT-SEP	3470		3805	65		4115	5831
Inflow to Shasta Lk (NWS)							
APR-JUL	1260	1371	1528	85	1724	2102	1803
Sacramento R nr Red Bluff (DWR)							
APR-JUL	1420		1750	72		2140	2421
OCT-SEP	4550		4970	58		5465	8544
Sacramento R nr Red Bluff (NWS)							
APR-JUL	1692	1861	2129	86	2402	3064	2479
Feather R at Lk Almanor (DWR)							
APR-JUL			220	66			333
NF Feather R at Pulga (DWR)							
APR-JUL			660	64			1028
NF Feather R nr Prattville (NWS)							
APR-JUL	174	186	201	60	219	262	333
MF Feather R nr Clio (DWR)							
APR-JUL			55	64			86
SF Feather R at Ponderosa Dam (DWR)							
APR-JUL			65	59			110
Inflow to Oroville Res (DWR)							
APR-JUL	800		1090	64		1340	1704
OCT-SEP	2795		3125	71		3410	4407

Sacramento River Basin (cont'd)

SACRAMENTO RIVER BASIN
Streamflow Forecasts - April 1, 2018

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Forecast Point / Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Inflow to Oroville Res (NWS)							
APR-JUL	993	1053	1231	72	1474	1757	1701
N Yuba R bl Goodyears Bar (DWR)							
APR-JUL			200	72			279
N Yuba R bl Goodyears Bar (NWS)							
APR-JUL	187	196	233	85	275	317	273
Inflow Jackson Mdws & Bowman Res (DWR)							
APR-JUL			75	67			112
S Yuba R nr Langs Crossing (DWR)							
APR-JUL			160	69			233
Yuba R at Smartville (DWR)							
APR-JUL	490		680	70		810	968
OCT-SEP	1595		1795	79		1935	2268
Yuba R at Smartville (NWS)							
APR-JUL	663	697	831	85	1017	1211	981
NF American R at N FK Dam (DWR)							
APR-JUL			190	73			262
MF American R nr Auburn (DWR)							
APR-JUL			390	75			522
MF American R nr Auburn (NWS)							
APR-JUL	387	412	460	94	547	647	490
Inflow to Union Valley Res (NWS)							
APR-JUL	79	85	91	93	103	127	98
Silver Ck bl Camino Div. Dam (DWR)							
APR-JUL			130	75			173
Silver Ck bl Camino Div. Dam (NWS)							
APR-JUL	134	147	157	99	186	224	158
Inflow to Folsom Res (DWR)							
APR-JUL	640		900	75		1090	1199
OCT-SEP	1910		2175	83		2370	2626
Inflow to Folsom Res (NWS)							
APR-JUL	932	1003	1134	92	1378	1663	1232

The average is based on the 1981-2010 reference period.

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

San Joaquin River Basin

With one exception, this month's forecasts of streamflow volumes for April through July range between 70- and 90 percent of average.

SAN JOAQUIN RIVER BASIN
Streamflow Forecasts - April 1, 2018

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Forecast Point / Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Cosumnes R at Michigan Bar (DWR)							
APR-JUL	55		90	72		130	125
OCT-SEP	245		285	75		330	379
Cosumnes R at Michigan Bar (NWS)							
APR-JUL	107	114	137	107	181	239	128
NF Mokelumne R nr West Point (DWR)							
APR-JUL			330	76			437
Inflow to Pardee Res (DWR)							
APR-JUL	270		350	77		440	457
OCT-SEP	520		605	81		700	748
Inflow to Pardee Res (NWS)							
APR-JUL	351	379	412	88	480	512	467
MF Stanislaus R bl Beardsley (DWR)							
APR-JUL			250	75			334
Inflow to New Melones Res (DWR)							
APR-JUL	410		510	75		640	682
Inflow to New Melones Resr (DWR)							
OCT-SEP	795		900	78		1040	1149
Inflow to New Melones Res (NWS)							
APR-JUL	491	537	575	83	684	798	690
Cherry & Eleanor Cks, Hetch Hetchy (DWR)							
APR-JUL			250	79			315
Tuolumne R nr Hetch Hetchy (DWR)							
APR-JUL			470	78			604
Tuolumne R nr Hetch Hetchy (NWS)							
APR-JUL	431	467	503	84	542	607	596
Inflow to New Don Pedro Res (DWR)							
APR-JUL	770		940	79		1120	1193
OCT-SEP	1405		1580	83		1770	1909
Inflow to New Don Pedro Res (NWS)							
APR-JUL	908	993	1078	88	1173	1396	1228

San Joaquin River Basin (cont'd)

SAN JOAQUIN RIVER BASIN
Streamflow Forecasts - April 1, 2018

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Forecast Point / Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Merced R, Pohono Bridge Yosemite(DWR)							
APR-JUL			260	70			372
Merced R, Pohono Bridge Yosemite (NWS)							
APR-JUL	307	327	348	90	398	415	385
Inflow to Lake McClure (NWS)							
APR-JUL	461	486	535	83	629	685	642
Merced R, Pohono Bridge Yosemite (NWS)							
APR-JUL	307	327	348	90	398	415	385
Inflow to Lake McClure (NWS)							
APR-JUL	461	486	535	83	629	685	642
San Joaquin R at Mammoth Pool (DWR)							
APR-JUL			720	70			1026
Big Ck bl Huntington Lk (DWR)							
APR-JUL			65	71			91
SF San Joaquin R nr Florence Lk (DWR)							
APR-JUL			140	70			201
Inflow to Millerton Lk (DWR)							
APR-JUL	730		860	70		1040	1228
OCT-SEP	1125		1265	71		1460	1793
Inflow to Millerton Lk (NWS)							
APR-JUL	943	1019	1131	90	1270	1461	1258

The average is based on the 1981-2010 reference period.

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Tulare Lake Basin

This month's forecasts of streamflow volumes for April through July range between 37- and 84 percent of average.

TULARE LAKE BASIN
Streamflow Forecasts - April 1, 2018

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Forecast Point / Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
NF Kings R nr Cliff Camp (DWR)							
APR-JUL			160	67			239
Inflow to Pine Flat Res (DWR)							
APR-JUL	650		810	67		970	1210
OCT-SEP	970		1145	67		1320	1702
Inflow to Pine Flat Res (NWS)							
APR-JUL	886	964	1037	84	1183	1383	1231
Kaweah R at Terminus Res (DWR)							
APR-JUL	110		145	51		180	285
OCT-SEP	190		230	51		270	451
Kaweah R at Terminus Res (NWS)							
APR-JUL	158	168	189	66	217	283	288
Tule R at Success Res (DWR)							
APR-JUL	14.0		23	37		30	63
OCT-SEP	50		59	40		70	147
Tule R at Success Res (NWS)							
APR-JUL	35	39	49	77	59	80	63
Kern R nr Kernville (DWR)							
APR-JUL			200	52			384
Inflow to Isabella Res (DWR)							
APR-JUL	190		240	52		290	458
OCT-SEP	375		435	60		500	728
Inflow to Isabella Res (NWS)							
APR-JUL	193	205	229	50	245	283	454

The average is based on the 1981-2010 reference period.

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

North Coast Area Basin

This month's forecasts of streamflow volumes for April through July remain well below average.

NORTH COASTAL AREA
Streamflow Forecasts - April 1, 2018

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Forecast Point / Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Trinity R at Lewiston (DWR)							
APR-JUL	200		260	41		340	639
OCT-SEP	465		530	39		615	1348
Inflow to Clair Engle Lk (NWS)							
APR-JUL	271	306	364	55	460	567	666
Scott R nr Fort Jones (NWS)							
APR-JUL	61	69	80	46	102	128	173

The average is based on the 1981-2010 reference period.

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Klamath Basin

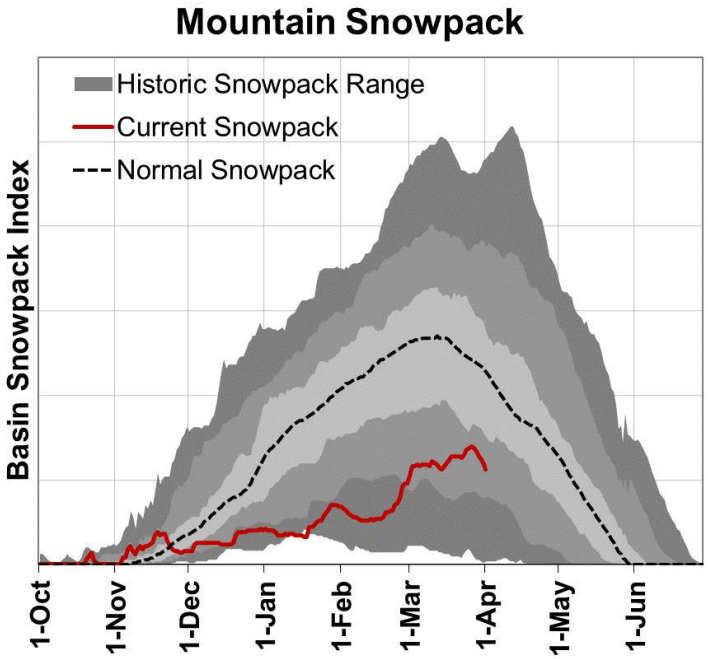
From the Water Supply Outlook Report for Oregon (April 1, 2018)
https://www.wcc.nrcs.usda.gov/ftpref/states/or/watersupply/2018/WSOR_2018_Apr.pdf):

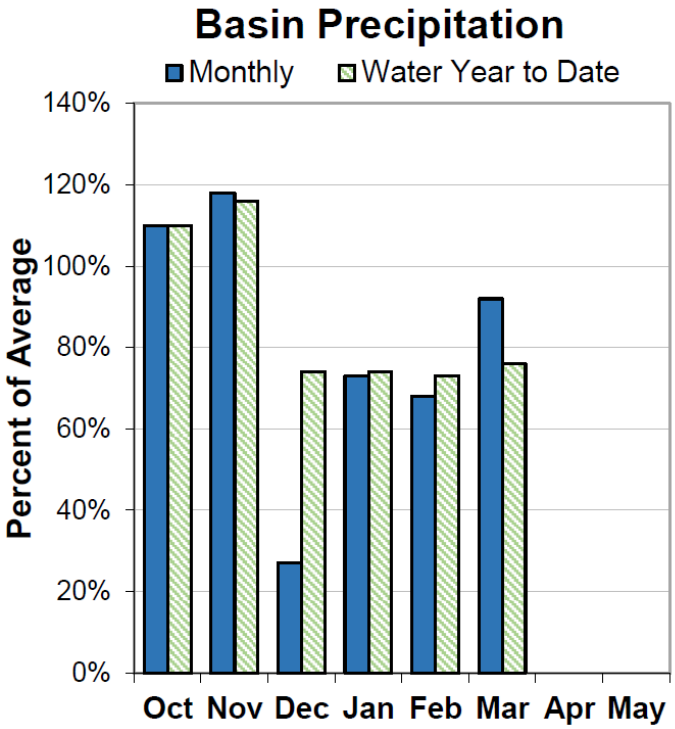
Snowpack: As of April 1, the basin snowpack was 55% of normal. This is slightly higher than last month when the snowpack was 46% of normal. In general, SNOTEL sites in the basin have reached around 20% to 60% of normal peak snowpack levels this winter.

Precipitation: March precipitation was 92% of average. Precipitation since the beginning of the water year (October 1 - April 1) has been 76% of average.

Reservoirs: As of April 1, storage at major reservoirs in the basin ranges from 89% of average at Clear Lake to 128% of average at Gerber Reservoir.

Streamflow Forecast: The April through September streamflow forecasts in the basin range from 28% to 63% of average. Overall, forecasts increased slightly from last month's report.





Klamath Basin (cont'd)

KLAMATH BASIN
Streamflow Forecasts - April 1, 2018

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Forecast Point / Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Gerber Res Inflow (2)							
APR-JUL	0.02	1.54	3.9	28	7.5	14.7	14
APR-SEP	0.03	1.64	4.1	28	7.7	15	14.4
Sprague R nr Chiloquin							
APR-JUL	65	84	98	52	113	138	188
APR-SEP	81	101	116	55	132	157	210
Williamson R bl Sprague R							
APR-JUL	115	148	171	58	194	225	295
APR-SEP	163	199	225	63	245	285	355
Upper Klamath Lake Inflow (1,2)							
APR-JUL	119	191	225	56	255	330	400
APR-SEP	171	250	285	59	320	400	480

The average is based on the 1981-2010 reference period.

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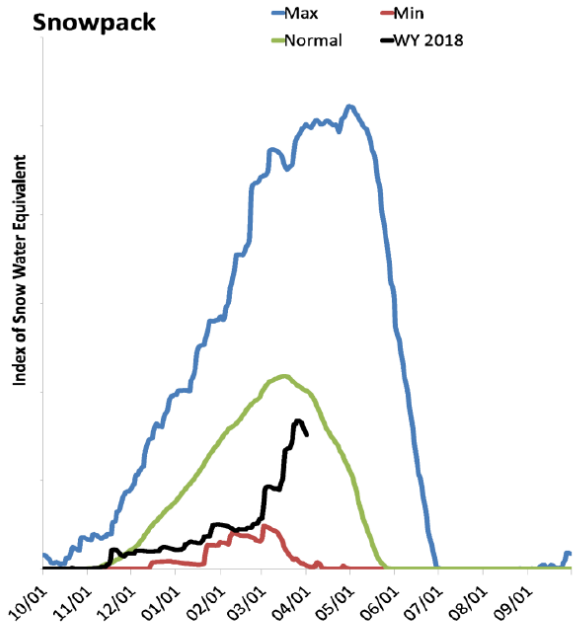
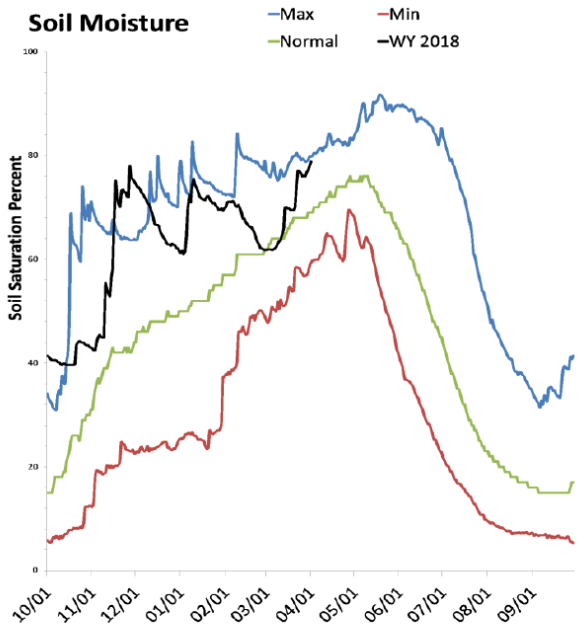
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

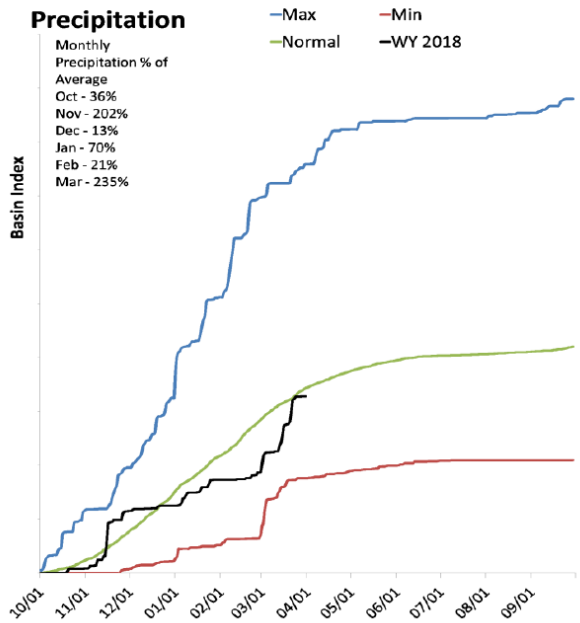
Lake Tahoe Basin

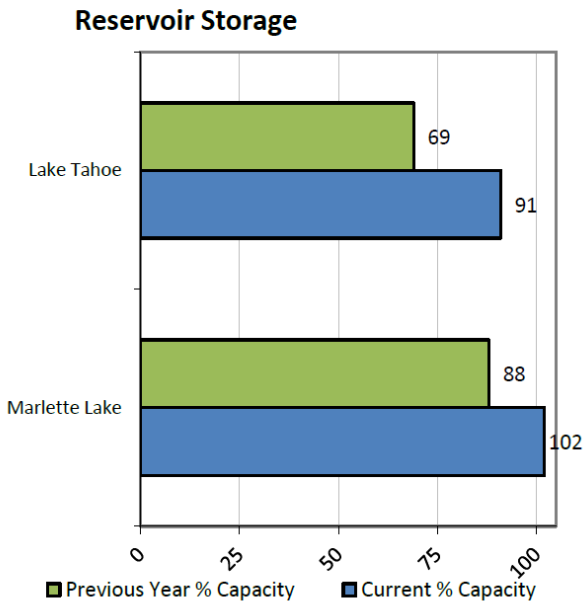
From the Water Supply Outlook Report for Nevada (April 1, 2018)
(https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/):

Snowpack in the Lake Tahoe Basin is below normal at 75% of median, compared to 205% last year. Precipitation in March was much above average, which brings the seasonal accumulation (Oct-Mar) to 95% of average. Soil moisture is at 78% saturation, compared to 79% last year. Lake Tahoe's water elevation is 6228.58 ft, which is 5.58 ft above the lake's natural rim and equals a storage of 680.6 thousand acre-feet. Last year its elevation was 6227.21 ft which equaled a storage of 516.2 thousand acre-feet. Lake Tahoe is expected to fill to its legal limit of 6,229.1 ft this summer based on lake rise forecasts.









Lake Tahoe Basin (cont'd)

LAKE TAHOE BASIN
Streamflow Forecasts - April 1, 2018

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Forecast Point / Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Marlette Lk Inflow (Acre-ft) (2)							
APR-JUL	140	500	750	90	1000	1360	830
MAY-JUL	60	340	520	96	650	1000	540
Lake Tahoe Rise (Gates Closed) (1)							
APR-HIGH	0.84	1.30	1.4	107	1.65	2.00	1.31
MAY-HIGH	0.52	0.92	1.1	102	1.28	1.68	1.08
Lake Tahoe Net Inflow (2)							
APR-JUL	62	100	125	86	150	188	144.6

The average is based on the 1981-2010 reference period.

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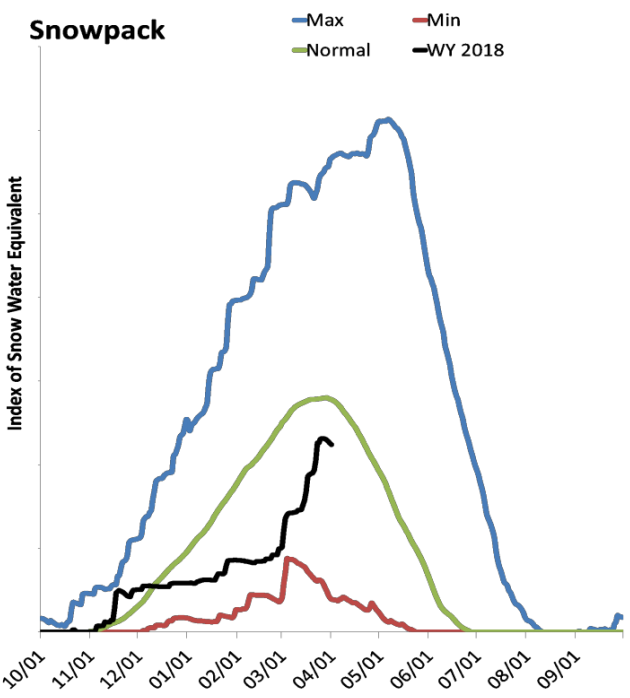
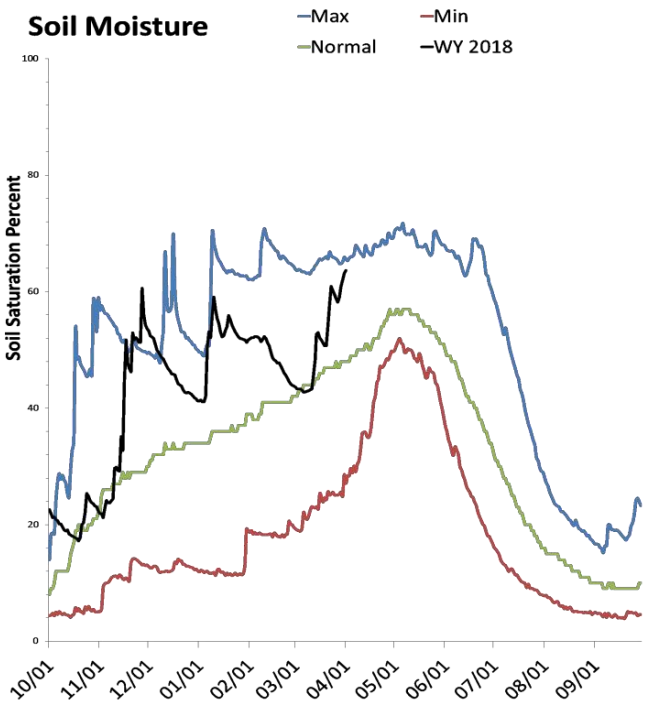
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

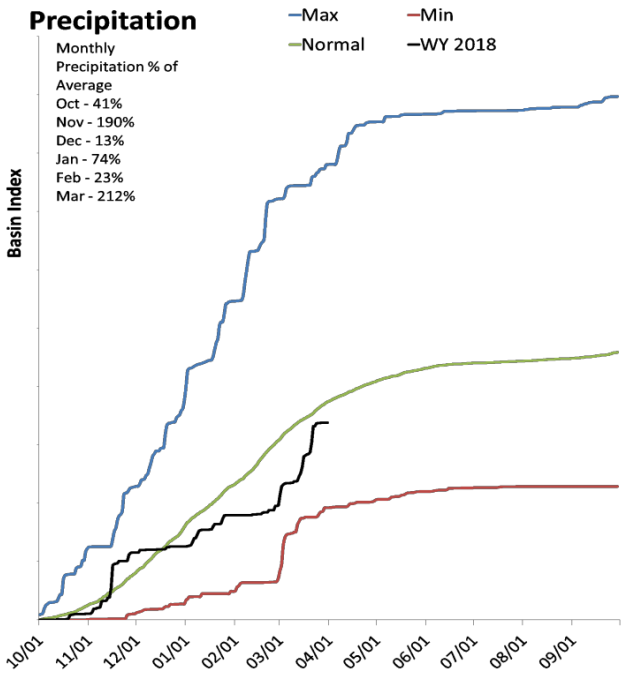
Truckee River Basin

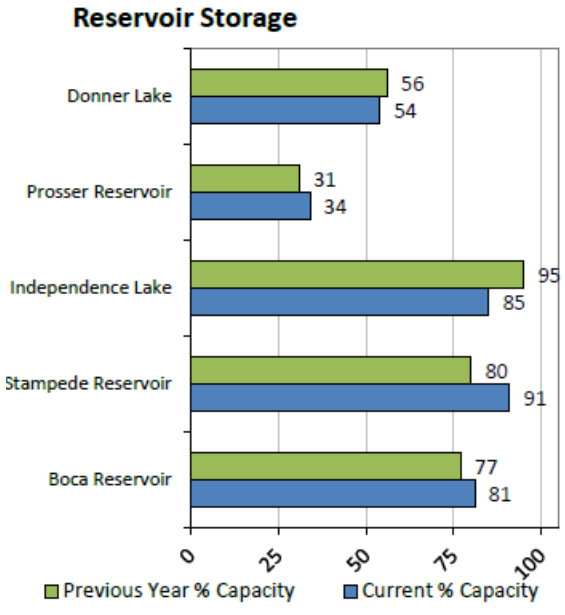
Including Information from the Water Supply Outlook Report for Nevada (April 1, 2018) (https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/):

Snowpack in the Truckee River Basin is below normal at 75% of median, compared to 191% last year. Precipitation in March was much above average, which brings the seasonal accumulation (Oct-Mar) to 90% of average. Soil moisture is at 63% saturation, compared to 66% last year. Combined reservoir storage is 83% of capacity, compared to 75% last year. Forecast streamflow volumes range from 76% to 106% of average.









Truckee River Basin (cont'd)

TRUCKEE RIVER BASIN
Streamflow Forecasts - April 1, 2018

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Forecast Point / Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Donner Lake Inflow							
APR-JUL	9.7	12.0	13.6	76	15.2	17.5	17.84
MAY-JUL	5.2	7.7	9.5	78	11.3	13.8	12.24
Martis Ck Res Inflow							
APR-JUL	3.5	5.9	7.5	80	9.1	11.5	9.39
MAY-JUL	0.66	3.0	4.6	81	6.2	8.5	5.66
Prosser Ck Res Inflow							
APR-JUL	25	30	33	77	36	41	42.84
MAY-JUL	15.6	21	24	78	27	32	30.84
Independence Lk Inflow							
APR-JUL	6.5	8.2	9.3	77	10.4	12.1	12.10
MAY-JUL	5.1	6.7	7.8	79	8.9	10.5	9.88
Sagehen Ck nr Truckee							
APR-JUL	3.8	4.4	4.8	86	5.3	6.1	5.6
MAY-JUL	2.9	3.3	3.6	86	3.9	4.5	4.2
Stampede Res Local Inflow							
APR-JUL	41	54	63	82	72	85	76.50
MAY-JUL	19.3	35	45	83	55	71	54.47
L Truckee R ab Boca Resv							
APR-JUL	75	87	90	102	99	120	88
MAY-JUL	34	51	63	102	75	92	62
Boca Res Local Inflow							
APR-JUL	0.71	2.9	4.4	80	5.9	8.1	5.5
MAY-JUL	0.12	0.81	1.6	79	2.4	3.6	2.02
Truckee R ab Farad Sidewater							
APR-JUL	63	79	89	82	99	115	108.09
MAY-JUL	42	58	69	84	80	96	82.14
Truckee R at Farad							
APR-JUL	230	260	270	106	295	350	255
MAY-JUL	126	164	190	104	215	255	183

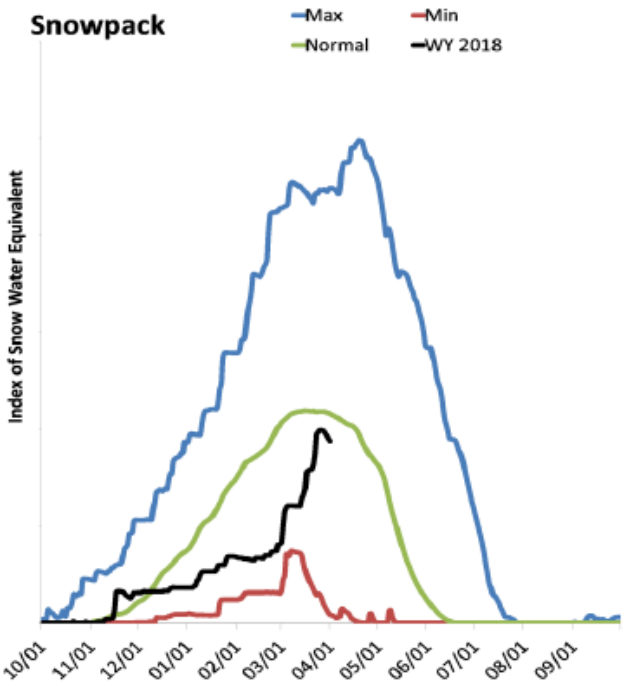
The average is based on the 1981-2010 reference period.

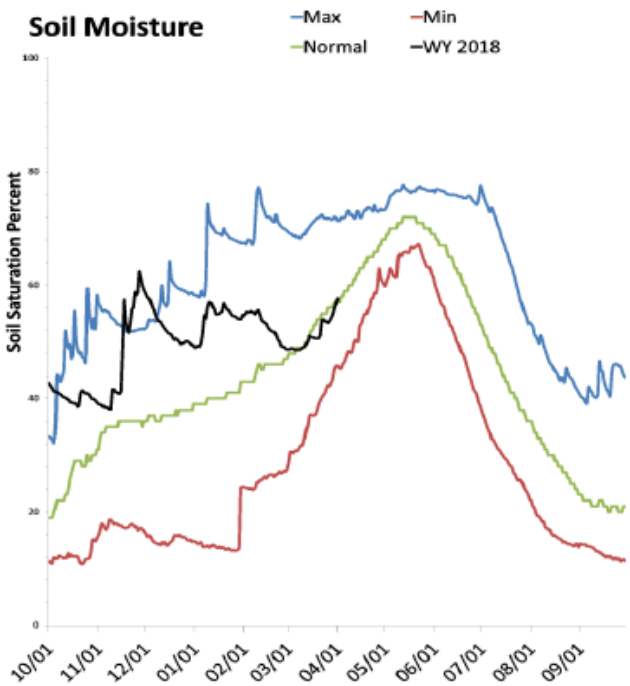
1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

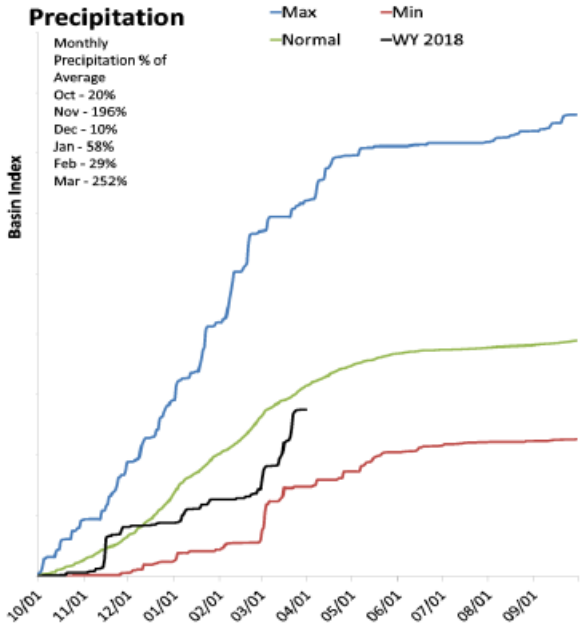
Carson River Basin

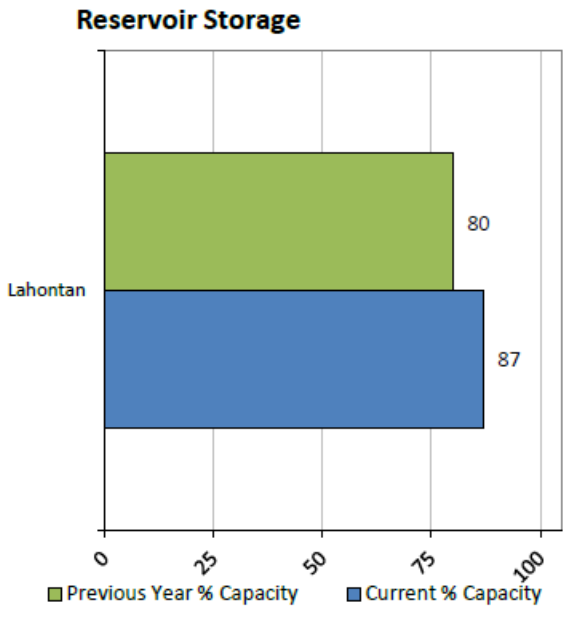
Including Information from the Water Supply Outlook Report for Nevada (April 1, 2018) (https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/):

Snowpack in the Carson River Basin is near normal at 90% of median, compared to 210% last year. Precipitation in March was much above average, which brings the seasonal accumulation (Oct-Mar) to 87% of average. Soil moisture is at 57% saturation, compared to 72% last year. Storage in Lahontan Reservoir is 87% of capacity, compared to 80% last year. Forecast streamflow volumes for the East- and West Forks of the Carson River (Apr-Jul) are 82% and 87% of average respectively.









Carson River Basin (cont'd)

CARSON RIVER BASIN
Streamflow Forecasts - April 1, 2018

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Forecast Point / Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
EF Carson R nr Gardnerville							
APR-JUL	103	132	152	82	172	201	186
MAY-JUL	72	101	120	79	139	168	151
WF Carson R at Woodfords							
APR-JUL	30	40	47	87	54	64	54
MAY-JUL	16.5	29	37	88	45	58	42

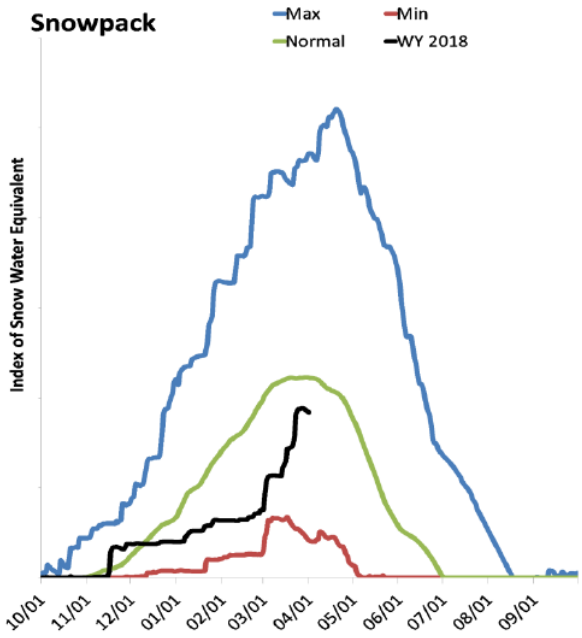
The average is based on the 1981-2010 reference period.

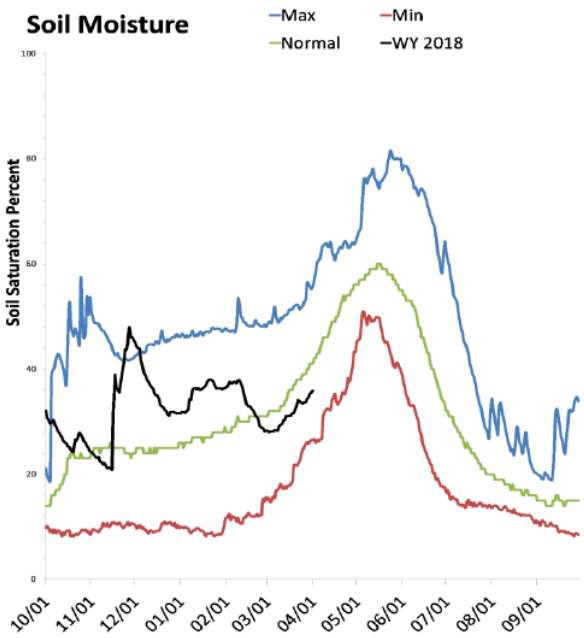
1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

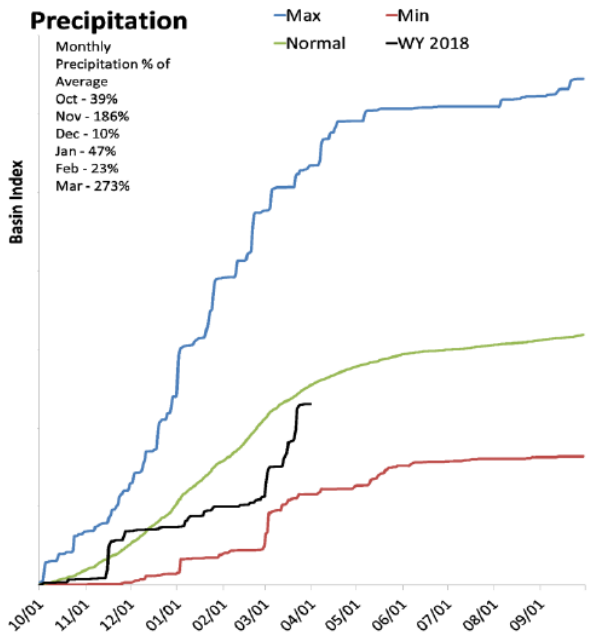
Walker River Basin

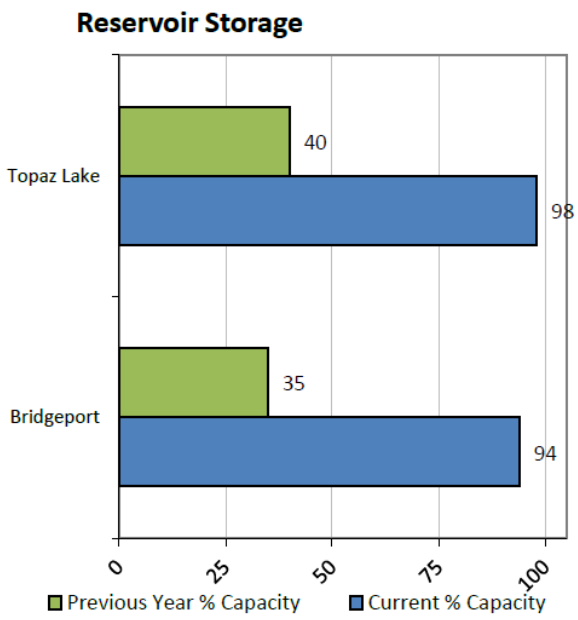
From the Water Supply Outlook Report for Nevada (April 1, 2018)
(https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/):

Snowpack in the Walker River Basin is below normal at 86% of median, compared to 217% last year. Precipitation in March was much above average, which brings the seasonal accumulation (Oct-Mar) to 90% of average. Soil moisture is at 36% saturation, compared to 54% last year. Combined reservoir storage is 96% of capacity, compared to 38% last year. Forecast streamflow volumes (April to July or August) range from 80% to 82% of average.









Walker River Basin (cont'd)

WALKER RIVER BASIN
Streamflow Forecasts - April 1, 2018

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Forecast Point / Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
E Walker R nr Bridgeport							
APR-AUG	16.6	39	55	81	71	93	68
MAY-AUG	16.4	35	47	85	59	78	55
W Walker R bl L Walker R nr Coleville							
APR-JUL	89	114	130	80	146	171	162
MAY_JUL	75	99	115	81	131	155	142
W Walker R nr Coleville							
APR-JUL	92	117	133	82	149	174	163
MAY-JUL	63	95	117	82	139	171	143

The average is based on the 1981-2010 reference period.

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management

Owens River Basin

OWENS RIVER BASIN
Streamflow Forecasts - April 1, 2018

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Forecast Point / Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Owens R (DWR) APR-SEP			170	74			231

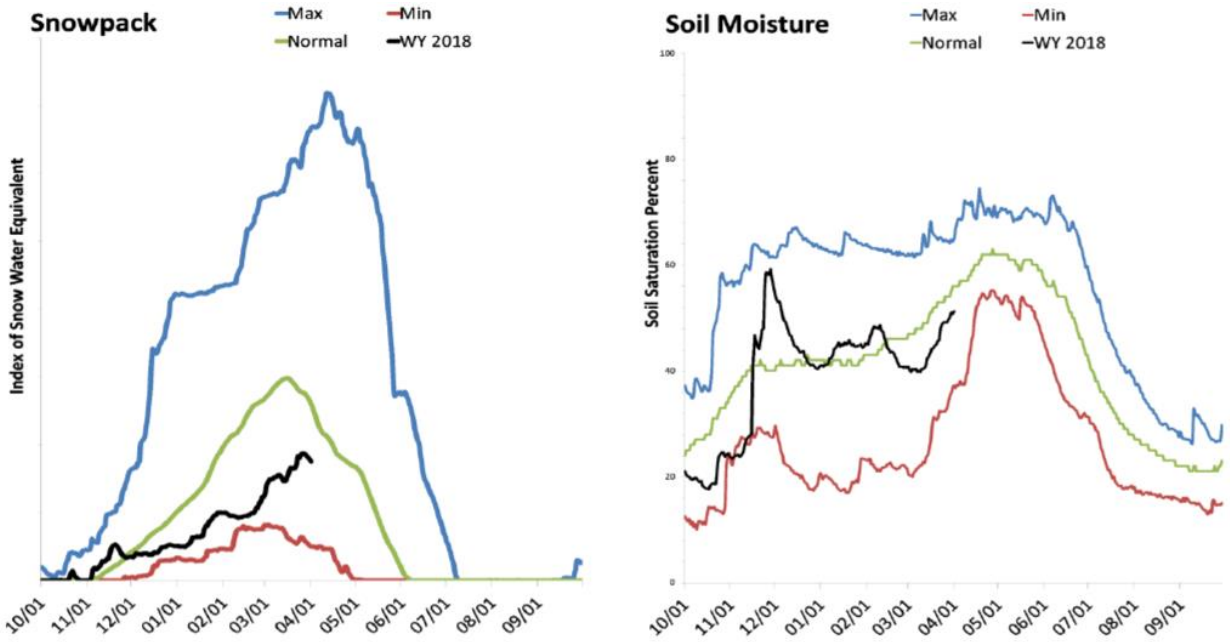
The average is based on the 1981-2010 reference period.

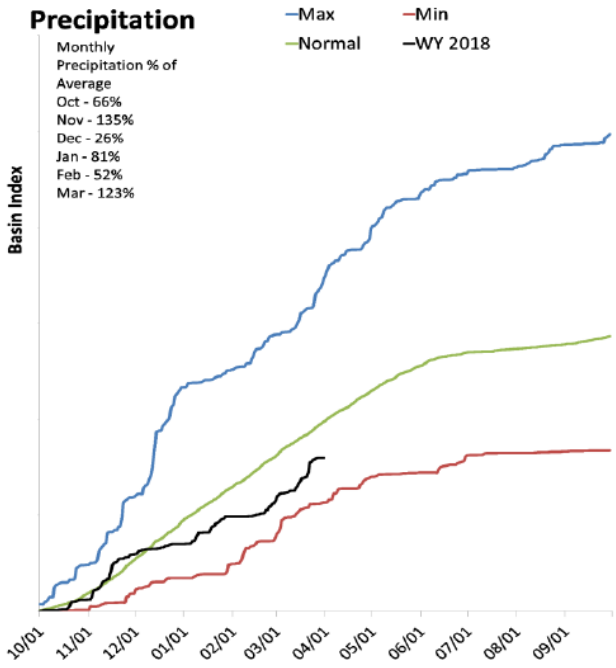
1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Northern Great Basin

From the Water Supply Outlook Report for Nevada (April 1, 2018)
(https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/):

Snowpack in the Northern Great Basin is much below normal at 62% of median, compared to 129% last year. Precipitation in March was above average, which brings the seasonal accumulation (Oct-Mar) to 81% of average. Soil moisture is at 48% saturation, compared to 63% last year. Forecast streamflow volumes (Apr-Jul) range from 62% to 75% of average.





Northern Great Basin (cont'd)

NORTHERN GREAT BASIN
Streamflow Forecasts - April 1, 2018

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Forecast Point / Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Davis Ck (Acre-Ft)							
APR-JUL	3400	4500	5400	75	6600	8700	7233
APR-SEP	4000	5200	6200	78	7500	9700	7991
Eagle Ck nr Eagleville							
APR-JUL	0.7	2.1	3.0	70	3.9	5.3	4.3
Bidwell CK nr Ft. Bidwell							
APR-JUL	3.6	5.9	7.4	62	8.9	11.2	12.0

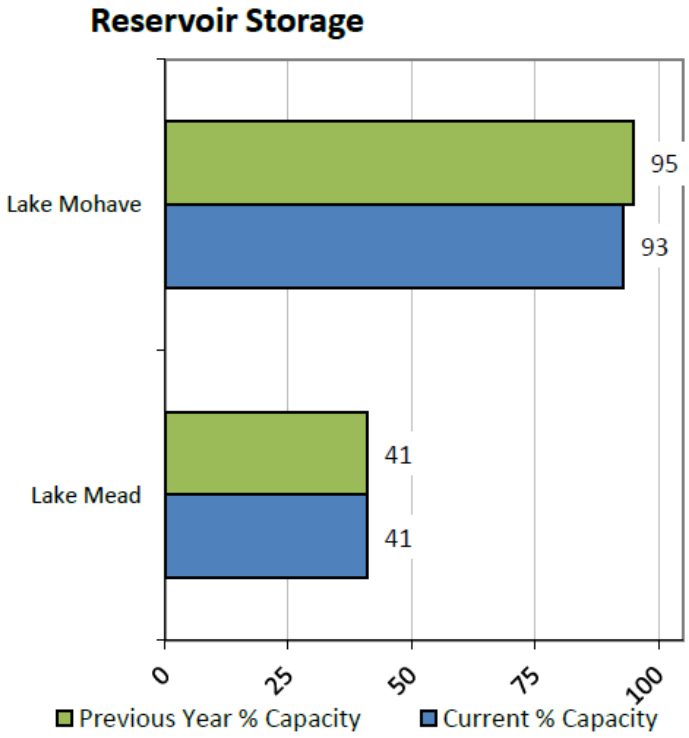
The average is based on the 1981-2010 reference period.

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Lower Colorado River Basin

From the Water Supply Outlook Report for Nevada (April 1, 2018)
(https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/):

Storage in Lake Mead is 41% of capacity, the same as last year at this time. Lake Mohave storage is 93% of capacity, down slightly from 95% last year. The forecast streamflow volume for Lake Powell Inflow is 38% of average.



COLORADO RIVER BASIN
Streamflow Forecasts - April 1, 2018

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

Forecast Point Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	(% AVG.)	30% (KAF)	10% (KAF)	30 Yr Avg (KAF)
Lake Powell Inflow (2) APR-JUL	1350	2120	2750	38	3460	4640	7160

The average is based on the 1981-2010 reference period.

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snowcourses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

Issued by

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California Water Supply Outlook Report

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